

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An optical disk apparatus comprising:

an optical head having: a lens convergor for ~~means of~~ converging light from a light source onto an optical disk; and a photodetector for detecting the light thus converged and then reflected from said optical disk;

a tracking error generator for ~~signal generating means of~~ generating a tracking error signal in order to perform tracking control on the basis of said detected light;

a detector for ~~detecting means of~~ detecting a disk tilt DT indicating the amount of tilt of said optical head relative to said optical disk; and

a calculator for ~~calculating means of~~ calculating a lens shift LS indicating the amount of shift of said lens means relative to said optical head, according to a predetermined rule on the basis of said generated tracking error signal and said detected disk tilt DT.

2. (Original) An optical disk apparatus according to Claim 1, wherein said predetermined rule is expressed by the following Equation 1

$$\text{[Equation 1] } T = a \cdot LS + b \cdot DT$$

which is satisfied among: the value T of said generated tracking error signal; said detected disk tilt DT; and said lens shift LS to be calculated; when predetermined constants a and b are given.

3. (Currently Amended) An optical disk apparatus according to Claim 2, wherein said ~~detecting means~~ detector ~~can detect~~ detects said disk tilt DT.

4. (Currently Amended) An optical disk apparatus according to Claim 3

comprising optical head driving means of driving said optical head within the cross section in a radius direction of said optical disk on the basis of the result of said detection of said disk tilt DT, wherein

when said tracking error signal is detected, said optical head is ~~driven-tilted~~ relative to the optical disk so that said detected disk tilt DT substantially becomes zero.

5. (Currently Amended) An optical disk apparatus according to Claim 2, wherein:

~~said detecting means can detect~~ detector detects the reproduction state of the information from said optical disk;

said optical disk apparatus comprises an optical head driver ~~driving means~~ effor driving said optical head within the cross section in a radius direction of said optical disk on the basis of the result of said detection of said reproduction state of said information; and

when said tracking error signal is detected, said optical head is driven so that said reproduction state of said information becomes optimum.

6. (Withdrawn) An optical disk apparatus according to Claim 5, wherein:

said detection of said reproduction state of said information indicates the detection of the amplitude and/or the jitter of a signal used in the reproduction of said information; and

said being driven such that said reproduction state of said information becomes optimum indicates being driven so that said amplitude is maximized and/or said jitter is minimized and thereby so that said disk tilt DT substantially becomes zero.

7. (Withdrawn) An optical disk apparatus according to Claim 2, wherein:

said detecting means can detect (1) a lens tilt LT indicating the amount of tilt of said lens means relative to said optical head and (2) the reproduction state of the information from said optical disk;

said optical disk apparatus comprises lens driving means of driving the lens center axis of said lens means within the cross section in a radius direction of said optical disk on the basis of the result of said detection;

in order to detect said disk tilt DT, said lens means is driven so that said reproduction state of said information becomes optimum; and

said disk tilt DT is detected on the basis of said detected lens tilt LT in the situation that said lens center axis of said lens means has been driven so that said reproduction state of said information becomes optimum.

8. (Withdrawn) An optical disk apparatus according to Claim 7, wherein:

said detection of said reproduction state of said information indicates the detection of the amplitude and/or the jitter of a signal used in the reproduction of said information;

said being driven so that said reproduction state of said information becomes optimum indicates being driven such that said amplitude is maximized and/or said jitter is minimized; and

after said lens tilt LT is detected in order to detect said disk tilt DT, said tracking error signal is detected in the situation that said lens means has been driven so that said lens tilt LT substantially becomes zero.

9. (Previously Presented) An optical disk apparatus according to Claim 1, wherein said tracking error signal is detected in a mirror region of said optical disk.

10. (Previously Presented) An optical disk apparatus according to Claim 3 or 7, wherein said tracking error signal is detected by detecting an average level of said tracking error signal in an OFF-state of tracking control in a data region in the

vicinity of the disk radius position of said optical disk where said disk tilt DT or said lens tilt LT is detected.

11. (Currently Amended) An optical disk apparatus according to Claim 1 comprising ~~conveying means of a conveyor for~~ conveying said optical head in a radius direction of said optical disk on the basis of said calculated lens shift LS.

12. (Original) A method of calculating the amount of lens shift comprising:

a converging step of converging light from a light source onto an optical disk by means of lens means;

a detecting step of detecting the light converged onto said optical disk and then reflected from said optical disk;

a generating step of generating a tracking error signal in order to perform tracking control on the basis of said detected light;

a disk tilt detecting step of detecting a disk tilt DT indicating the amount of tilt of an optical head having said lens means relative to said optical disk; and

a calculating step of calculating a lens shift LS indicating the amount of shift of said lens means relative to said optical head, according to a predetermined rule on the basis of said generated tracking error signal and said detected disk tilt DT.

13. (Currently Amended) A tangible computer readable medium having a program including instructions for causing a computer ~~to serve as a tracking error signal generator, a detector, and a calculator for an optical disk apparatus, the program instructions including to perform~~ the steps of:

generating ~~said a~~ tracking error signal in order to perform tracking control on the basis of ~~said~~ detected light;

detecting a disk tilt DT indicating the amount of tilt of ~~said an~~ optical head relative to ~~said an~~ optical disk; and

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calculating a lens shift LS indicating the amount of shift of said a lens means relative to said optical head, according to a predetermined rule on the basis of said generated tracking error signal and said detected disk tilt DT.

14.-16. (Cancelled).